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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/047,878	01/17/2002	Shijian Zhou	GP-300898	5565

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EXAMINER	
NGUYEN, HANH N	
ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 10/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/047,878	ZHOU ET AL.	
	Examiner	Art Unit	
	Nguyen N Hanh	2634	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

P riod for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 July 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 14-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 14-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *16 July 2003* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Remarks

1. In view of amendments, the Examiner withdraws the objection to the drawings. The cancellation of claim 13 has been acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kajiwara et al. in view of Ehrhart et al.

Regarding claim 1, Kajiwara et al. show an electric motor comprising: a stator (5 in Fig. 1A) for producing a magnetic field; a rotor (7) rotated by said magnetic field; a motor shaft (1) coupled to said rotor; and a first set of passageways (11 in Fig. 1A and 1B) through said rotor to conduct an air coolant. Kajiwara et al. fail to show the coolant media is liquid coolant.

However, Ehrhart et al. disclose a set of passageways through the stator using liquid coolant or gaseous cooling media as an alternative for the purpose of cooling off the motor.

Since Kajiwara et al. and Ehrhart et al. are in the same field of endeavor, the purpose disclosed by Ehrhart et al. would have been recognized in the pertinent art of Kajiwara et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Kajiwara et al. by using a liquid coolant as taught by Ehrhart et al. for the purpose of cooling off the motor.

Regarding claim 2, Kajiwara et al. also disclose an electric motor wherein said stator includes current-carrying coils (Fig. 1A) to generate said magnetic field.

Regarding claims 3, Kajiwara et al. also disclose an electric motor wherein said rotor is a squirrel cage rotor.

Regarding claims 4, Kajiwara et al. also disclose the invention except showing the rotor includes permanent magnet. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make rotor with permanent magnet, since the Examiner takes Official Notice of the equivalence of permanent magnet and electromagnet for their use in the construction of an electric motor and the selection of any of these known equivalents would be within the level of ordinary skill in the Art.

3. Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kajiwara et al. in view of Ehrhart et al. and further in view of Yamamoto.

Regarding claim 5, Kajiwara et al. and Ehrhart et al. show all limitations of the claimed invention except showing the electric motor wherein the motor shaft includes an interior surface that is cone shaped to conduct a liquid coolant through said interior surface to cool the electric motor.

However, Yamamoto discloses the electric motor wherein said motor shaft includes an interior surface that is cone shaped to conduct a liquid coolant through said

interior surface to cool the electric motor for the purpose of improving the cooling of the motor.

Since Kajiwara et al., Ehrhart et al. and Yamamoto are in the same field of endeavor, the purpose disclosed by Yamamoto would have been recognized in the pertinent art of Kajiwara et al. and

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Kajiwara et al. and Ehrhart et al. by using shaft includes an interior surface that is cone shaped to conduct a liquid coolant through said interior surface to cool the electric motor as taught by Yamamoto for the purpose of improving the cooling of the motor.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kajiwara et al. in view of Ehrhart et al. and further in view of Darby et al.

Regarding claim 6, Kajiwara et al. and Ehrhart et al. show all limitations of the claimed invention except showing a rotor wherein said first set of passageways has entrance openings and exit openings, said entrance openings oriented about said motor shaft center line at a first diameter, said exit openings oriented about said motor shaft center line at a second diameter, and said first diameter being less than said second diameter

However, Darby et al. disclose the electric motor with a set of passageways (80 in Fig. 2 and 3) has entrance openings and exit openings, said entrance openings oriented about said motor shaft center line at a first diameter, said exit openings oriented about said motor shaft center line at a second diameter, and said first

diameter being less than said second diameter (Fig. 3) for the purpose of forming centrifugal pressure (Col. 6, lines 53-57).

Since Kajiwara et al., Ehrhart et al. and Darby et al. are in the same field of endeavor, the purpose disclosed by Darby would have been recognized in the pertinent art of Kajiwara et al. and Ehrhart et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Kajiwara et al. and Ehrhart et al. by forming a rotor wherein said first set of passageways has entrance openings and exit openings, said entrance openings oriented about said motor shaft center line at a first diameter, said exit openings oriented about said motor shaft center line at a second diameter, and said first diameter being less than said second diameter as taught by Darby et al. for the purpose of forming centrifugal pressure.

5. Claims 7,8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kajiwara et al. in view of Ehrhart et al. and further in view of in view of Grennan et al.

Regarding claim 7, Kajiwara et al. and Ehrhart et al. show all limitations of the claimed invention except showing the electric motor further including a second set of passageways between said rotor and said motor shaft.

However, Grennan et al. disclose the electric motor further including a second set of passageways between said rotor (20 in Fig. 1) and said motor shaft (32 in Fig. 1 and Col. 4, lines 1-35) for the purpose of cooling off the motor.

Since Kajiwara et al., Ehrhart et al. and Greenan et al. are in the same field of endeavor, the purpose disclosed by Grennan et al. would have been recognized in the pertinent art of Kajiwara et al. and Ehrhart et al..

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Kajiwara et al. and Ehrhart et al. by using a set of passageways between said rotor and said motor shaft as taught by Grennan et al. for the purpose of cooling off the motor.

Regarding claim 8, the structure disclosed by Kajiwara et al. and Ehrhart et al., modified by Grennan et al. would have second set of passageways have entrance openings and exit openings, said entrance openings oriented about said motor shaft center line at a first diameter, said exit openings oriented about said motor shaft center line at a second diameter, and said first diameter being less than said second diameter (because of the conical shape of the shaft).

6. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Kajiwara et al.

Regarding claim 9, Yamamoto also discloses an electric motor comprising: a wound stator (10 in Fig. 1), said wound stator conducting current to generate a magnetic field; a rotor (6) rotated by said magnetic field; a motor shaft (7) coupled to said rotor, said motor shaft including a cone-shaped interior surface having an entrance opening (4) and an exit opening (9a and 9b); and a liquid coolant propelled by centrifugal force generated by the rotation of said rotor through said cone-shaped interior surface, said liquid coolant cooling the electric motor (abstract). Yamamoto fails

to show a first set of passageways through said rotor to conduct said liquid coolant through said rotor.

However, Kajiwara et al. disclose a set of passageways through the rotor using cooling air for the purpose of cooling off the motor.

Since Yamamoto and Kajiwara et al. are in the same field of endeavor, the purpose disclosed by Kajiwara et al. would have been recognized in the pertinent art of Yamamoto.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Yamamoto by using a first set of passageways through said rotor to conduct said liquid coolant through said rotor as taught by Kajiwara et al. for the purpose of cooling off the motor.

Regarding claim 10, Yamamoto also discloses an electric motor wherein said rotor is a squirrel cage rotor.

Regarding claim 11, Yamamoto also shows the rotor includes permanent magnets (Fig. 1)

Regarding claim 12, Yamamoto also disclose an electric motor wherein said liquid coolant is oil (abstract).

7. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Kajiwara et al. and further in view Grennan et al.

Regarding claim 15, Yamamoto and Kajiwara et al. show all limitations of the claimed invention except showing the electric motor further including a second set of passageways between said rotor and said motor shaft.

However, Grennan et al. disclose the electric motor further including a second set of passageways between said rotor (20 in Fig. 1) and said motor shaft (32 in Fig. 1 and Col. 4, lines 1-35) for the purpose of cooling off the motor.

Since Yamamoto, Kajiwara et al. and Greenan et al. are in the same field of endeavor, the purpose disclosed by Grennan et al. would have been recognized in the pertinent art of Yamamoto and Kajiwara et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Yamamoto and Kajiwara et al. by using a set of passageways between said rotor and said motor shaft as taught by Grennan et al. for the purpose of cooling off the motor.

Regarding claim 16, the structure disclosed by Yamamoto and Kajiwara et al., modified by Grennan et al. would have second set of passageways have entrance openings and exit openings, said entrance openings oriented about said motor shaft center line at a first diameter, said exit openings oriented about said motor shaft center line at a second diameter, and said first diameter being less than said second diameter (because of the conical shape of the shaft).

8. Claims 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Kajiwara et al. and further in view of Darby et al.

Regarding claim 14, Yamamoto and Kajiwara et al. show all limitations of the claimed invention except showing a rotor wherein said first set of passageways has entrance openings and exit openings, said entrance openings oriented about said motor shaft center line at a first diameter, said exit openings oriented about said motor shaft

center line at a second diameter, and said first diameter being less than said second diameter

However, Darby et al. disclose the electric motor with a set of passageways (80 in Fig. 2 and 3) has entrance openings and exit openings, said entrance openings oriented about said motor shaft center line at a first diameter, said exit openings oriented about said motor shaft center line at a second diameter, and said first diameter being less than said second diameter for the purpose of forming centrifugal pressure.

Since Yamamoto, Kajiwara et al. and Darby et al. are in the same field of endeavor, the purpose disclosed by Darby would have been recognized in the pertinent art of Yamamoto and Kajiwara et al.

It would have been obvious at the time the invention was made to a person having an ordinary skill in the art to modify Yamamoto and Kajiwara et al. by forming a rotor wherein said first set of passageways has entrance openings and exit openings, said entrance openings oriented about said motor shaft center line at a first diameter, said exit openings oriented about said motor shaft center line at a second diameter, and said first diameter being less than said second diameter as taught by Darby et al. for the purpose of forming centrifugal pressure.

Regarding claim 17, it is noted that all limitations of the method claim have been fulfilled by Yamamoto, Kajiwara et al. and Darby as in claims 9 and 14.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Information on How to Contact USPTO

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh N Nguyen whose telephone number is (703)305-3466. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner 's supervisor, Nestor Ramirez can be reached on (703)308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-1782.

HNN

October 9, 2003

Nicholas Ponomarenko
Primary Examiner
Technology Center 2800